tooling

Work Order ID 51888

Tuesday, September 08, 2009 3:25:40 PM

POSITIVE RECALL

Item ID: D350-748-101 **Accept** **Setup** **Start** **Stop**

Revision ID: D E E 10.01.12

Item Name: Crosstube Installation, High Fwd

Start Date: 9/9/2009 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 9/29/2009 **Req'd Qty:** 1.00 **Customer:**

Reference:

Approvals: **Process Plan:** R mf **Date** 09-9-06 **Tooling:** ______ **Date:** ______ **Run** **Start** **Stop**

QC: ______ **Date:** ______ **SPC (Y/N):** ______ **Date:** ______

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp

Draw Nbr	Revision Nbr
N/A	Rev D

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
100 DC Document Control	DOCUMENT CONTROL	0.00							
	Memo Photocopy bluefile & type labels per PPPD350-748-101	0.00	CHG001	Sidosly					
110 CNC Bend 1 CNC Delta 100 Bender	BENDING MACHINE - CROSSTUBES	0.00				1X	0	MB	10-01-13
	Memo Bend tube as per Dwg D350-748-141 using CNC bender program D350F and Folio FT______	0.00							
120 QC Quality Control	QC15- Crosstube Dimensional Check	0.00				QP	10.01.13		
	Memo	0.00							

Item ID: D350-748-101 **Accept**
Revision ID: D
Item Name: Crosstube Installation, High Fwd

Setup Start / Stop

Start Date: 9/9/2009 **Start Qty:** 1.00
Required Date: 9/29/2009 **Req'd Qty:** 1.00
Cust Item ID:
Customer:
Reference:

Run Start / Stop

Approvals: **Process Plan:** ______ **Date:** ______ **Tooling:** ______ **Date:** ______
QC: ______ **Date:** ______ **SPC (Y/N):** ______ **Date:** ______

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130		0.00							
Crosstubes	Crosstubes					____	____	____	____
Crosstubes	Memo	0.00							
140	QC5- Inspect part completeness to step on W/O	0.00							
QC	BAtch # ingraved — Memo	0.00				(QC)	____	____	____
Quality Control	CHECK 10 DEG HOLES WITH DT8876E (EUROCOPTER CLAMP)								

Memo (sequence 130):

1-Drill Tube as per Dwg D350-748-141 Using DT8876 A,B &C Drill Jigs, Set-up drill table as per QSI 010

2-Deburr

3-Engrave Part # and Batch # as per Dwg D350-748-141 — MB 10-01-15

4-Remove all marks from tube within limits of D350-748-141 — AWM 10-1-27

5- Apply a light coat of LPS3 on the interior of tube — AWM 10-1-28
Batch: 10995-6

SJ 10/06/28

Work Order ID 51888

Tuesday, September 08, 2009 3:25:40 PM

Item ID: D350-748-101 **Accept** **Setup Start**

Revision ID: D **Stop**

Item Name: Crosstube Installation, High Fwd

Start Date: 9/9/2009 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 9/29/2009 **Req'd Qty:** 1.00 **Customer:**

Reference:

Run Start

Approvals: **Process Plan:** ______ **Date:** ______ **Tooling:** ______ **Date:** ______

QC: ______ **Date:** ______ **SPC (Y/N):** ______ **Date:** ______ **Stop**

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150 Outsource3 Outsource process - Cad plate	Outsource process-Cadplate per QSI017 4.1.9.1	0.00							
	Memo Issue P/O: 11282 Stress relief at 375° for 5 hours Magnetic Particle Inspect per ASTM E1444 Cadium Plate per AMS-QQ-P-416B, Class 1, Type 2 Embrittle relief at 375° for 8 hours, Chromate Treat Possibe Supplier: Southwest United Industries Ensure Certificate of Conformity is attached	0.00							
160 Packaging Packaging	Receive & Inspect for Damage & Mat'l Certs	0.00							
	Memo Ensure certificate of conformity is attached	0.00							
170 QC Quality Control	QC5- Inspect part completeness to step on W/O	0.00							
	Memo	0.00							

Handwritten sign-offs: 150: 10-2-01; 160: 10/3/01 (1); 170: 10 04 19 (1)

Work Order ID 51888

Tuesday, September 08, 2009 3:25:40 PM

Item ID: D350-748-101 **Accept** **Setup Start**

Revision ID: D

Item Name: Crosstube Installation, High Fwd **Stop**

Start Date: 9/9/2009 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 9/29/2009 **Req'd Qty:** 1.00 **Customer:**

Reference:

Approvals: **Process Plan:** ______ **Date:** ______ **Tooling:** ______ **Date:** ______ **Run Start**

QC: ______ **Date:** ______ **SPC (Y/N):** ______ **Date:** ______ **Stop**

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180 SprayPaint Spray Painting	SprayPaint **Memo** 1-Prime inside crosstube as per QSI 005 4.2 2-Prime Outside of Tube as per Dart QSI 005 4.2	0.00 0.00				ml	10	04	19 (1)
190 QC Quality Control	QC14- Inspect Spray Paint **Memo** Then,Wrap in plastic bag to protect from scratches	0.00 0.00				1			10-04-20
200 Crosstubes Crosstubes	Crosstubes **Memo** 1-Install Ground wire Insert,then insert screw and washer 2-Install Abraision strips as per Dwg D350-748-141 & QSI 035. 3-Install supports Using Dt8876 as per Dwg D350-748-141,Torque to 60-80 IN-LBS	0.00 0.00				ml	10	04	20 (1)

Work Order ID 51888

Tuesday, September 08, 2009 3:25:40 PM

Item ID: D350-748-101 **Accept**

Setup **Start**

Revision ID: D

Stop

Item Name: Crosstube Installation, High Fwd

Start Date: 9/9/2009 **Start Qty:** 1.00

Cust Item ID:

Required Date: 9/29/2009 **Req'd Qty:** 1.00

Customer:

Reference:

Run **Start**

Approvals: **Process Plan:** ______________ **Date:** __________ **Tooling:** ____________ **Date:** __________

Stop

QC: ______________________ **Date:** __________ **SPC (Y/N):** __________ **Date:** __________

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210 QC Quality Control	QC5- Inspect part completeness to step on W/O **Memo**	0.00 0.00	S 10/04/20						
220 Packaging Packaging	Pick Kit **Memo**	0.00 0.00				10-4-28			
230 QC Quality Control	QC4- 100% Inspect kits for completeness **Memo**	0.00 0.00	S 10/05/11						

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D350-748-101 PAR #: NCR10-026 Fault Category: Cross tubes NCR: (Yes) No DQA: [signature] Date: 10-05-11

Resolution: accepted Disposition: use as is QA: N/C Closed: [signature] Date: 10/05/12

NCR: 51888		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B: Initial Chief Eng	Action Description Chief Eng	Sign & Date	Verification Section C	Approval Chief Eng	Approval QC Inspector
10-05-10		load test crosstube per Dauds Email - Ref NCR10-026	[initials] 10.05.10 per QSI 042	→	[initials] 100510	[initials] 10.05.10 per QSI 042	[signature] 100510	[signature] 100510
		touchup/repaint as necessary replace abrasion strip if required	[initials] 10.05.10 per QSI 042	→	[initials] 10.05.10	[initials] 10/05/10	[signature] 100510	[signature] 100510
		R.C: NCR 10-026. inspection/verification to ensure the tubes are okay.						

NOTE: Date & initial all entries

L Lacelle

From: David Shepherd [dshepherd@dartaero.com]

Sent: April 27, 2010 3:40 PM

To: 'Mike Petsche'

Cc: 'Bill Beckett'; 'L Lacelle'; 'Chris Provencal'; 'Dan Stow'; ssheldon@dartaero.com

Subject: 350 crosstubes

Mike,

I discussed the 350 crosstube load testing with Bill a little while ago and this plan makes sense to him.

So, my recommendation to clear these crosstubes is to load the fwd crosstubes to 3500 lb and the aft crosstubes to 3000 lb in the deflection test rig and document on the work orders that this test has been completed. Hold max load for 1 minute. Per TP-D350-748-2, these loads represent the maximum load on these crosstubes at gross weight and are below the yield point of the material. I would like to request that Chris Provencal witness these tests and sign off the work orders based on his experience with Dart landing gears. My feeling is that if there is a problem with the parts, it will manifest itself during this load test. I, for one, would feel a lot more confident in testing each crosstube in this manner than relying totally on what Exova has to say. I think it would be very difficult to reach a conclusion on the whole batch on the basis of cracks in two parts from the batch.

I believe that we can accomplish this before next Friday, which also gives us time to hear what Exova has to say in case it has an impact on our decision. So far, what I have seen from Exova shows me that there are fluctuations in the heat treating but the tubes are heat treated to our specification.

For this reason, I believe we should tell DHS that it looks like we will be able to start shipping 350 crosstubes by May 7th pending a successful Engineering test of the material.

David.

Work Order ID 51888

Tuesday, September 08, 2009 3:25:40 PM

Item ID: D350-748-101
Revision ID: D
Item Name: Crosstube Installation, High Fwd

Accept

Setup **Start**
Stop

Start Date: 9/9/2009 **Start Qty:** 1.00
Required Date: 9/29/2009 **Req'd Qty:** 1.00
Reference:

Cust Item ID:
Customer:

Run **Start**
Stop

Approvals: **Process Plan:** ______ **Date:** ______ **Tooling:** ______ **Date:** ______
QC: ______ **Date:** ______ **SPC (Y/N):** ______ **Date:** ______

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
240 Packaging Packaging	Packaging	0.00							
	Memo Identify and pack for shipping as per PPP D350-748-101 Location: PPP Rev: B	0.00							
250 QC Quality Control	QC21- Final Inspection - Work Order Release	0.00							10 05 11
	Memo	0.00							

POSITIVE RECALL
EFFECTIVE 10-04-09 AUTH
DATE 10-05-11
RELEASED
NCR 10-026

see work for EP's sign off

10-05-11

Picklist Print

Tuesday, September 08, 2009 3:25:46 PM

Work Order ID: 51888

Parent Item: D350-748-101RevD

Parent Item Name: Crosstube Installation, High Fwd

Start Date: 9/9/2009 **Required Date:** 9/29/2009

Comments:

Start Qty: 1.00 **Required Qty:** 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D350-748-141TRNRevD Crosstube Turning Detail		Manufactured	No			110	Each	4.0000	1.0000	B-50623	MB 10-01-13	✓
ALS4-1032-225 Insert		Purchased	No			200	Each	8,753.000	1.0000			

D350-748-141TRNRevD:

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
FG	4	
37995	1	
37999	1	
40099	1	
40103	1	

ALS4-1032-225:

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST	8753	
107441	16	
110768	8737	

MJ 10-04-20

Picklist Print

Tuesday, September 08, 2009 3:25:46 PM

Work Order ID: 51888

Parent Item: D350-748-101RevD

Parent Item Name: Crosstube Installation, High Fwd

Start Date: 9/9/2009 **Required Date:** 9/29/2009

Comments:

Start Qty: 1.00 **Required Qty:** 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
AN960JD10 Washer		Purchased	No			200	Each	2,309.000	1.0000			

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST	2309	
105442	95	
109059	2	
109840	23	
110985	202	
111279	13	
111668	70	
112314	1000	
112369	904	

ml 10·04·20

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D2856-400RevA Abraison Strip		Manufactured	No			200	f	332.4577	1.2432			

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST	122.8077	
42437	44.93	
46543	77.8777	
Main Warehouse		
ST403	209.65	
50593	209.65	

ml 10 04 20

B# 56626

Picklist Print

Tuesday, September 08, 2009 3:25:46 PM

Work Order ID: 51888

Parent Item: D350-748-101RevD

Parent Item Name: Crosstube Installation, High Fwd

Start Date: 9/9/2009 **Required Date:** 9/29/2009

Comments:

Start Qty: 1.00 **Required Qty:** 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D3500-1RevC Saddle		Manufactured	No			~~200~~ 220	Each	17.0000	4.0000		10-4-2020	

Warehouse Location	Loc Qty	Loc Code	Qty Issued
Main Warehouse			
ST	17		
47119	12		4
47350	5		

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D3502-1RevB Support		Manufactured	No			200	Each	43.0000	2.0000			

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST	5	
41603	2	
42968	2	
47120	1	
Main Warehouse		
ST168	38	
50287	38	

B# 52903

ml 10-04-20

Picklist Print

Tuesday, September 08, 2009 3:25:46 PM

Work Order ID: 51888

Parent Item: D350-748-101RevD

Parent Item Name: Crosstube Installation, High Fwd

Start Date: 9/9/2009 **Required Date:** 9/29/2009

Comments:

Start Qty: 1.00 **Required Qty:** 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
MS21920-20 Clamp (per MIL-DTL-8783C)		Purchased	No			200	Each	117.3000	2.0000		ml 10-04-20	
MS27039-1-10 Screw		Purchased	No			200	Each	37.0000	1.0000		ml 10-04-20	

MS21920-20:

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST	117.3	
103478	2	
106484	12	
109269	9.3	
110536	10	
111281	34	
112307	50	

MS27039-1-10:

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST	37	
111425	37	

B# 112794

Picklist Print

Tuesday, September 08, 2009 3:25:47 PM

Work Order ID: 51888

Parent Item: D350-748-101RevD

Parent Item Name: Crosstube Installation, High Fwd

Start Date: 9/9/2009 **Required Date:** 9/29/2009

Comments:

Start Qty: 1.00 **Required Qty:** 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
AN4-41A Bolt		Purchased	No			220	Each	142.0000	8.0000	16-4-285		

Warehouse Location	Loc Qty	Loc Code	
Main Warehouse			
ST	142		
105940	4		
110363	16		
110731	50		8
111424	50		
112082	22		

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
AN4-6A Bolt		Purchased	No			220	Each	814.0000	16.0000	M112933	16-4-285	

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST	814	
102602	3	
105810	15	
107534	1	
109545	2	
110399	27	
111279	466	
112314	300	

Work Order ID: 51888

Parent Item: D350-748-101RevD

Parent Item Name: Crosstube Installation, High Fwd

Start Date: 9/9/2009 **Required Date:** 9/29/2009

Comments:

Start Qty: 1.00 **Required Qty:** 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
AN5-32A Bolt		Purchased	No			220	Each	79.0000	4.0000	M113121	10-4-28	

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST	79	
106242	3	
106519	4	
110363	17	
111916	5	
112082	50	

Picklist Print

Tuesday, September 08, 2009 3:25:47 PM

Work Order ID: 51888

Parent Item: D350-748-101RevD

Parent Item Name: Crosstube Installation, High Fwd

Start Date: 9/9/2009 **Required Date:** 9/29/2009

Comments:

Start Qty: 1.00 **Required Qty:** 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
AN960JD416 Washer NAS1149D0463		Purchased	No			220	Each	8,758.000	32.0000	M113706	10-4-28	

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST	8758	
102929	2	
105906	4	
107321	23	
107939	114	
108161	553	
108827	31	
109249	69	
110523	340	
111279	115	
111916	2620	
112314	4887	
16941	0	

Picklist Print

Tuesday, September 08, 2009 3:25:47 PM

Work Order ID: 51888

Parent Item: D350-748-101RevD

Parent Item Name: Crosstube Installation, High Fwd

Comments:

Start Date: 9/9/2009 **Required Date:** 9/29/2009

Start Qty: 1.00 **Required Qty:** 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
AN960JD516 Washer NAS1149B0563R		Purchased	No			220	Each	1,209.000	8.0000	M113706	10-4-285	

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST	1209	
100564	2	
106167	6	
107534	34	
107959	43	
108246	46	
108672	2	
109059	49	
109752	22	
110363	46	
110523	57	
111279	43	
112082	359	
112314	500	

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D3501-1RevA Bushing		Manufactured	No			220	Each	423.0000	16.0000		10-4-285	

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST	423	
45402	19	
45918	200	16
48268	204	

Work Order ID: 51888

Parent Item: D350-748-101RevD

Parent Item Name: Crosstube Installation, High Fwd

Start Date: 9/9/2009 **Required Date:** 9/29/2009

Comments:

Start Qty: 1.00 **Required Qty:** 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
MS21042L4 Nut		Purchased	No			220	Each	8,308.000	24.0000	M114108	10-4-28	

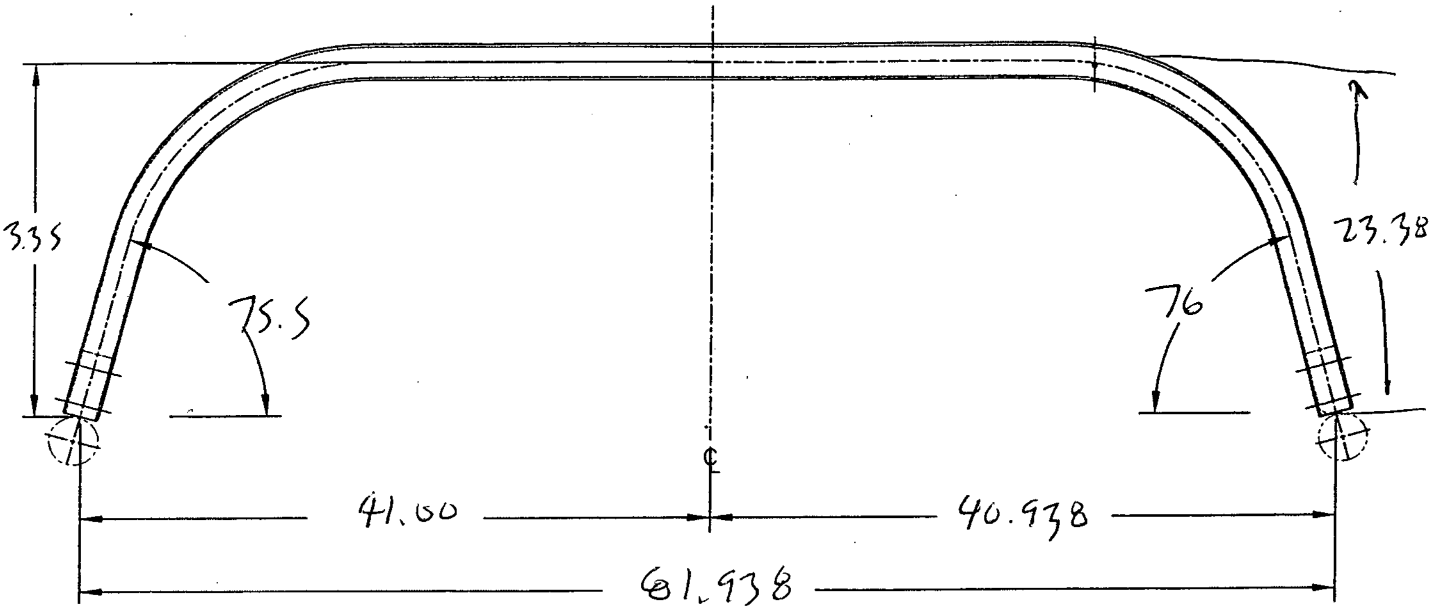
Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST	8308	
107499	5	
110507	266	
111827	5996	
112314	2000	
15924	0	
8182	41	

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
MS21042L5 Nut		Purchased	No			220	Each	1,337.000	4.0000	M114108	10-4-28	

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST	1337	
110382	10	
111636	327	
112314	1000	

DART AEROSPACE LTD	Work Order:	51888
Description: Crosstube High Fwd (AS350/355)	**Part Number:**	**D350-748-101**
Inspection Dwg: D350-748-141 **Rev:** D		**Page 1 of 1**

Required Dimension	Min	Max
Height	23.13	23.37
1/2 Span	40.78	41.02
Angle	75	77
Total Span	81.56	82.04



Comments
TWIST = 0.015"

QC15 Inspection	[signature]
Date	10.01.13

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	

DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA
CHECKED	APPROVED	DRAWING NO. D350-748-141 REV. D SHEET 1 OF 3
DATE 06.10.31		TITLE CROSSTUBE (AS 350/355 HI FWD) SCALE NTS

DART

RELEASED 06.10.31

REV	DATE	DESCRIPTION
A	06.03.31	NEW ISSUE
B	06.06.30	ADD D6017-115 & PRIME AND PAINT
C	06.08.14	ADD CAD PLATING
D	06.10.31	MAG. PARTICLE AND CAD PLATE AS MFD.

QTY	P/N	DESCRIPTION
X	D350-748-141	CROSSTUBE ASSEMBLY (AS 350/355 HI FWD)
1	D6017-115	CROSSTUBE (OR D6015-125)
2	D3502-1	SUPPORT
2	D2856-400-710	ABRASION STRIP
1	AELS-1032-225	INSERT
1	AN960JD10	WASHER
2	MS21920-20	CLAMP (PER DART SPEC. M-MS21920-20)
1	MS27039-1-10	SCREW

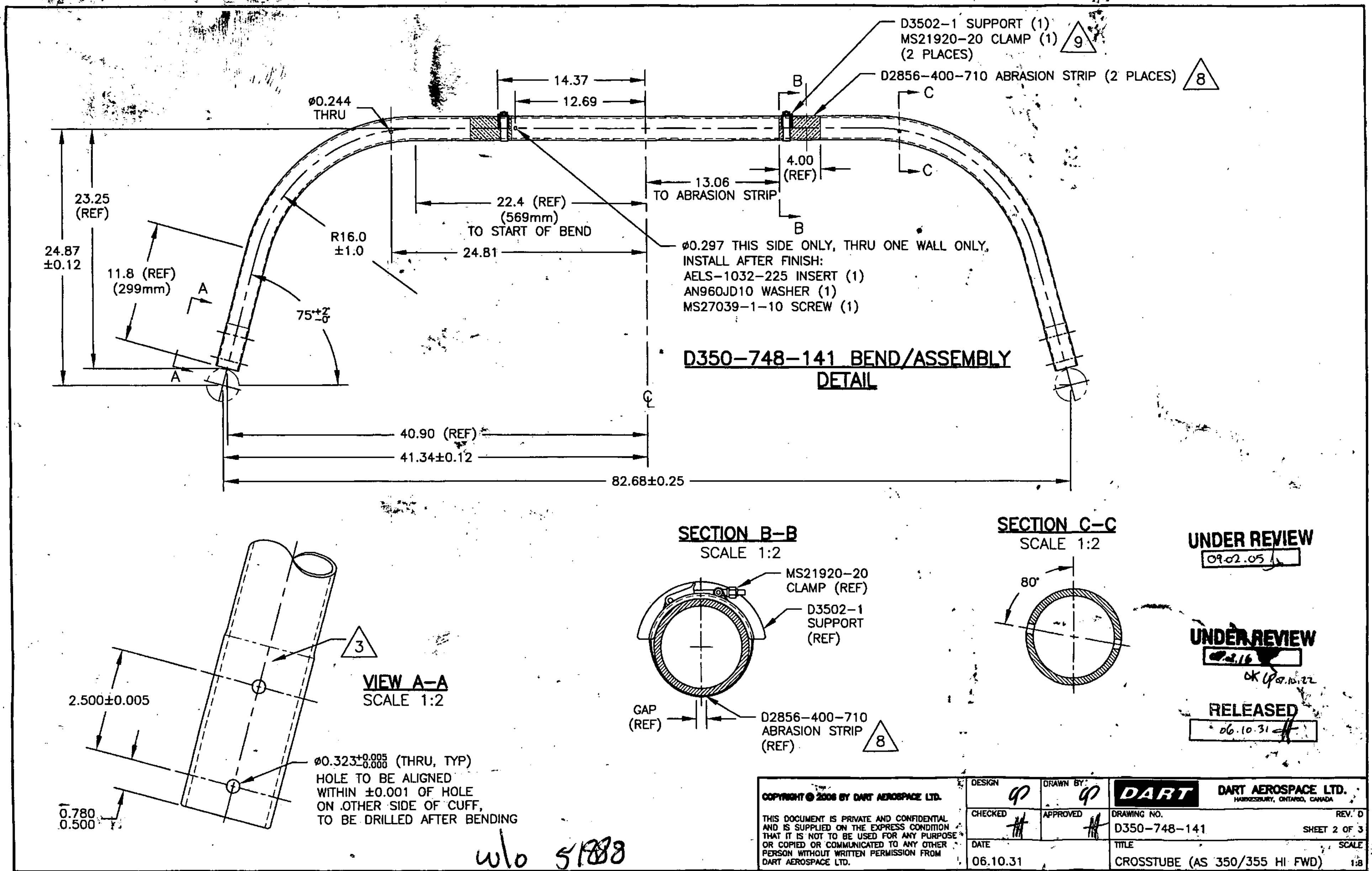
UNDER REVIEW 09.02.05 PER DCR #09-001

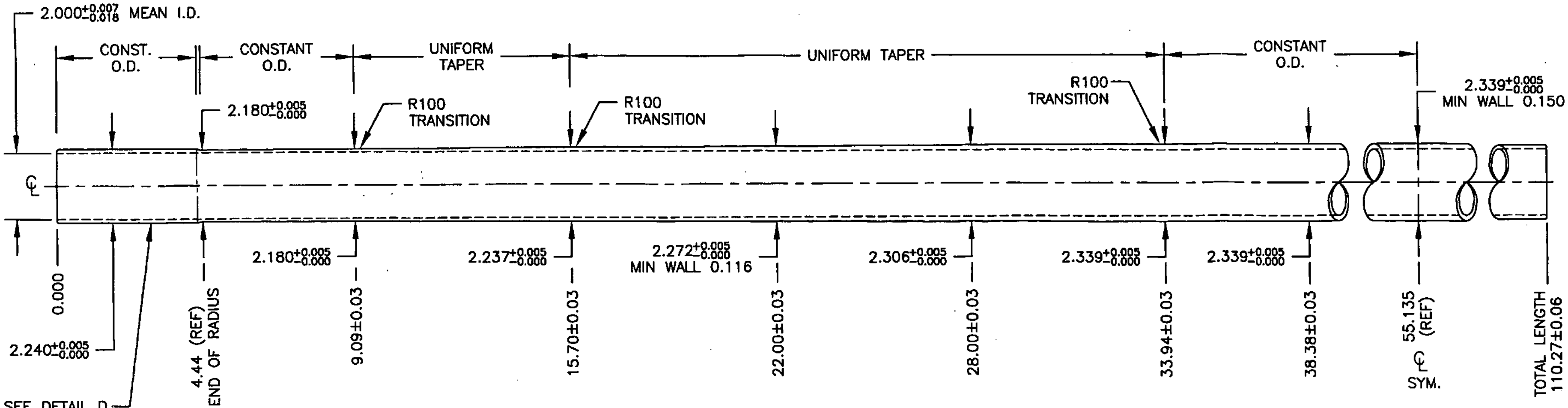
D350-748-141 CROSSTUBE:

1) MATERIAL: MANUFACTURED FROM D6017-115 OR D6015-125
   FINISHED LENGTH = 110.27±0.06
2) MACHINE PER MACHINING DETAIL ON PAGE 3. BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALY, TRANSITIONS SHOULD BE SMOOTH. NOTE: ALL HOLES ARE DRILLED AFTER BENDING.
3) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
4) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
5) HEAT TREAT TO MIN. 180 KSI PER MIL-T-6736 OR AMS 2759-1C AFTER TURNING
6) FINISH: MAGNETIC PARTICLE INSPECT PER DART QSI 038 4.2
   CADMIUM PLATE PER AMS-QQ-P-416B, CLASS 1, TYPE II
   PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
   PAINT OUTSIDE PER DART QSI 005 4.2
7) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO CRACKING/CHIPPING/GROOVES.
8) INSTALL D2856-400-710 ABRASION STRIP WITH A GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D3502-1 SUPPORT, PER QSI 035.
9) TORQUE MS21920-20 CLAMPS 60 TO 80 IN-LB
10) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
11) ALL DIMENSIONS ARE IN INCHES
12) PART IS SYMMETRIC ABOUT CENTERLINE EXCEPT FOR Ø0.297 HOLE.

SHOP COPY RETURN TO ENGINEERING
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WORK ORDER

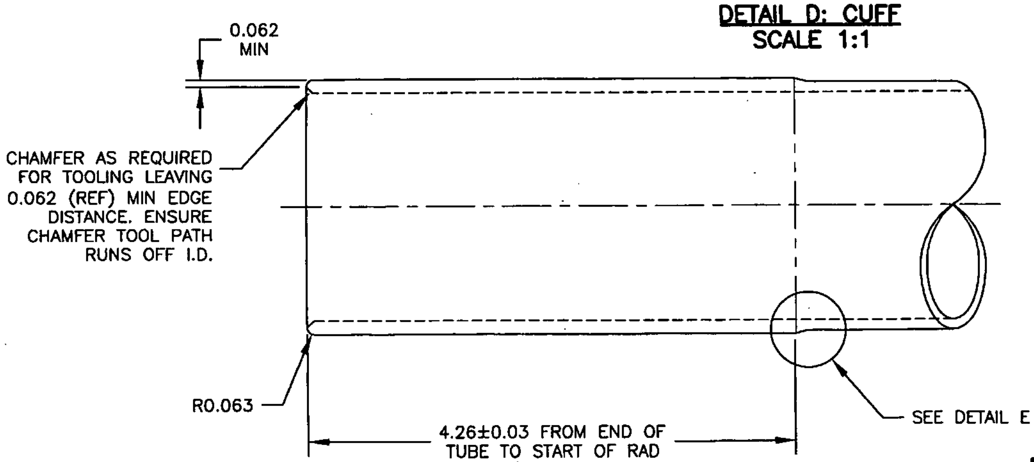
OK 07.10.22

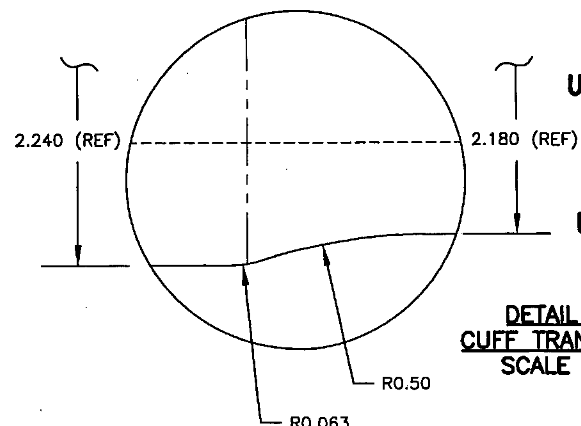

D3502-1 SUPPORT (1)
MS21920-20 CLAMP (1) 9
(2 PLACES)
D2856-400-710 ABRASION STRIP (2 PLACES) 8
14.37
12.69
ø0.244
THRU
B
C
4.00
(REF)
13.06
TO ABRASION STRIP
22.4 (REF)
(569mm)
TO START OF BEND
23.25
(REF)
R16.0
±1.0
24.81
ø0.297 THIS SIDE ONLY, THRU ONE WALL ONLY,
INSTALL AFTER FINISH:
AELS-1032-225 INSERT (1)
AN960JD10 WASHER (1)
MS27039-1-10 SCREW (1)
24.87
±0.12
11.8 (REF)
(299mm)
A
75°+2/-0
D350-748-141 BEND/ASSEMBLY
DETAIL
40.90 (REF)
41.34±0.12
82.68±0.25
SECTION B-B
SCALE 1:2
MS21920-20
CLAMP (REF)
D3502-1
SUPPORT
(REF)
GAP
(REF)
D2856-400-710
ABRASION STRIP
(REF) 8
SECTION C-C
SCALE 1:2
80°
UNDER REVIEW
09.02.05
UNDER REVIEW
OK 07.10.22
RELEASED
06.10.31
3
VIEW A-A
SCALE 1:2
2.500±0.005
ø0.323+0.005/-0.000 (THRU, TYP)
HOLE TO BE ALIGNED
WITHIN ±0.001 OF HOLE
ON OTHER SIDE OF CUFF,
TO BE DRILLED AFTER BENDING
0.780
0.500
w/o 51888
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DESIGN
DRAWN BY
CHECKED
APPROVED
DATE
06.10.31
DART
DART AEROSPACE LTD.
HAWKESBURY, ONTARIO, CANADA
DRAWING NO.
D350-748-141
REV. D
SHEET 2 OF 3
TITLE
CROSSTUBE (AS 350/355 HI FWD)
SCALE
1:8



D350-748-141 MACHINING DETAIL

DETAIL D: CUFF
SCALE 1:1





DETAIL E: CUFF TRANSITION
SCALE 9:1

UNDER REVIEW 04.02.05

UNDER REVIEW

CK 06.10.22

RELEASED 06.10.31

w/o 51888

DESIGN	DRAWN BY	DART AEROSPACE LTD. HAWKESBURY, ONTARIO, CANADA
CHECKED	APPROVED	DRAWING NO. D350-748-141 — REV. D — SHEET 3 OF 3
DATE 06.10.31		TITLE CROSSTUBE (AS 350/355 HI FWD) — SCALE 1:3

CERTIFICATE OF CONFORMANCE

CADORATH PLATING CO. LTD.
2150 LOGAN AVENUE
WINNIPEG, MANITOBA R2J-0J1

DATE: Feb-22-2010

CONSIGNED TO: Dart Aerospace Ltd.
1270 Aberdeen St.
Hawksbury, ON K6A 1K7

W/O #: 93273
INVOICE #: 48326

CONTRACT OR
PURCHASE ORDER # 513885

DESCRIPTION: SKID

QTY 1

P/N # d350-748-101

S/N # B51888

STRESS RELIEF BAKED @ 375 DEG. FOR 5 HRS. BAKE HEAT CHART #10-116. MPI INSPECTED IAW ASTM-E-1444. CADMIUM PLATED IAW AMS-QQ-P-416B, TYPE 2 YELLOW, CLASS 1. BAKE HEAT CHART #10-169.

CERTIFICATE: I certify that the items indicated here on have been inspected and tested and conform to all specifications and requirements detailed on the contract or purchase order.

Approved Inspector: ____________________